

DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION

Interim Final 2/5/99

RCRA Corrective Action

Environmental Indicator (EI) RCRIS code (CA750)

Migration of Contaminated Groundwater Under Control

Facility Name:	Griffin Pipe Products Company
Facility Address:	10 Adams Street, Lynchburg, Virginia 24504
Facility EPA ID #:	VAD065417008

1. Has **all** available relevant/significant information on known and reasonably suspected releases to the groundwater media, subject to RCRA Corrective Action (e.g., from Solid Waste Management Units (SWMU), Regulated Units (RU), and Areas of Concern (AOC)), been **considered** in this EI determination?

 X If yes – check here and continue with #2 below.

 If no – re-evaluate existing data, or

 If data are not available skip to #6 and enter “IN” (more information needed) status code.

BACKGROUND

Definition of Environmental Indicators (for the RCRA Corrective Action)

Environmental Indicators (EI) are measures being used by the RCRA Corrective Action program to go beyond programmatic activity measures (e.g., reports received and approved, etc.) to track changes in the quality of the environment. The two EI developed to-date indicate the quality of the environment in relation to current human exposures to contamination and the migration of contaminated groundwater. An EI for non-human (ecological) receptors is intended to be developed in the future.

Definition of “Migration of Contaminated Groundwater Under Control” EI

A positive “Migration of Contaminated Groundwater Under Control” EI determination (“YE” status code) indicates that the migration of “contaminated” groundwater has stabilized, and that monitoring will be conducted to confirm that contaminated groundwater remains within the original “area of contaminated groundwater” (for all groundwater “contamination” subject to RCRA corrective action at or from the identified facility (i.e., site-wide)).

Relationship of EI to Final Remedies

While Final remedies remain the long-term objective of the RCRA Corrective Action program the EI are near-term objectives which are currently being used as Program measures for the Government Performance and Results Act of 1993, GPRA). The “Migration of Contaminated Groundwater Under Control” EI pertains **ONLY** to the physical migration (i.e., further spread) of contaminated ground water and contaminants within groundwater (e.g., non-aqueous phase liquids or NAPLs). Achieving this EI does not substitute for achieving other stabilization or final remedy requirements and expectations associated with sources of contamination and the need to restore, wherever practicable, contaminated groundwater to be suitable for its designated current and future uses.

Duration / Applicability of EI Determinations

EI Determinations status codes should remain in RCRIS national database **ONLY** as long as they remain true (i.e., RCRIS status codes must be changed when the regulatory authorities become aware of contrary information).

Migration of Contaminated Groundwater Under Control
Environmental Indicator (EI) RCRIS code (CA750)
Page 2

2. Is **groundwater** known or reasonably suspected to be “contaminated”¹ above appropriately protective “levels” (i.e., applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria) from releases subject to RCRA Corrective Action, anywhere at, or from, the facility?

 X If yes – continue after identifying key contaminants, citing appropriate “levels”, and referencing supporting documentation.

 If no – skip to #8 and enter “YE” status code, after citing appropriate “levels”, and referencing supporting documentation to demonstrate that groundwater is not “contaminated.”

 If unknown – skip to #8 and enter “IN” status code.

Rationale and Reference(s):

The Griffin Pipe Products (GPP) facility is located on an approximately 11-acre property in the northeastern portion of the City of Lynchburg, along the western bank of the James River. The facility is located on relatively level ground within the James River floodplain. The site is bounded on the north and east by the James River. The site is bordered to the west by a railroad yard and a bluff which rises out of the floodplain. The southern portion of the site is ultimately bounded by Blackwater Creek. The majority of the site is paved or covered by buildings. A small canal runs through the site and under several of the buildings.

The GPP Foundry has been manufacturing ductile cast iron pipes for use in both potable water and sewer systems. The process involves high temperature melting and painting.

Over the last 18 years, groundwater monitoring wells have been installed at the site for a variety of investigative and monitoring purposes.

During the August 1990 site characterization required for a petroleum release (PC #1990-0587), eight monitoring wells (MW-1 through MW-8) were installed west of the engineering building in order to delineate the extent of contamination due to the documented release of gasoline from a 3,000-gallon gasoline UST and suspected waste oil tank. These wells are believed to have been intentionally abandoned following closure of the PC number in a letter from the VDEQ dated August 30, 2002.

During the 1993 site characterization required for a second petroleum release (PC #1991-0122), twelve monitoring wells (MW-9 through MW-20) were installed at the site in order to delineate the extent of contamination due to a suspected release of fuel oil, waste oil, or other petroleum products near the lunchroom area. Results of the investigation identified an area of LNAPL in groundwater which was apparently derived from the abandoned underground pipeline associated with the 22,500-gallon fuel oil AST on the western side of the foundry building. Seven additional monitoring wells (MW-21 through MW-27) and three temporary monitoring wells (MW-28 through MW-30) were installed at the site from 1993 to 2002 in order to further delineate the plume. Three product recovery wells (RW-2, RW-3, and RW-4) were installed at the site in 2003 in association with PC #1991-0122 as well. Under this project, a Corrective Action Plan (CAP) was developed in 1998, with an Addendum Addition added in Dec. 2002. Corrective action is ongoing under DEQ’s Tank Program.

A non-potable well that is sometimes used in production is also located outside of the northeastern corner of the main foundry building.

Based on the available information, including written facility records, historical environmental investigations, and interviews with facility personnel, 29 SWMUs and 44 AOCs have been identified on the site in the Phase I, RFI work plan, dated May 2008. The facility proposed that seven (7) SWMUs/AOCs, namely SWMUs 9, 10, 12 and 13 and AOCs 1, 2 and 15, will be investigated during the upcoming Phase I RCRA Facility Investigation (RFI) and that at least eleven (11) wells, including eight (8) existing wells, two (2) newly installed wells and one (1) non-potable well, will be used to evaluate site-wide groundwater

Migration of Contaminated Groundwater Under Control
Environmental Indicator (EI) RCRIS code (CA750)
Page 3

quality. Following the approval of the Phase I RFI work plan and submittal of the Phase I RFI report, groundwater quality will be further evaluated to determine the nature and extent of groundwater contamination on site.

References:

Phase I RCRA Facility Investigation (RFI) Workplan (May 2008) for Griffin Pipe Products Company

Footnotes:

¹ "Contamination" and "contaminated" describes media containing contaminants (in any form, NAPL and/or dissolved, vapors, or solids, that are subject to RCRA) in concentrations in excess of appropriate "levels" (appropriate for the protection of the groundwater resource and its beneficial uses).

Migration of Contaminated Groundwater Under Control
Environmental Indicator (EI) RCRIS code (CA750)

Page 4

3. Has the **migration** of contaminated groundwater **stabilized** (such that contaminated groundwater is expected to remain within “existing area of contaminated groundwater”² as defined by the monitoring locations designated at the time of this determination)?

- _____ If yes – continue after presenting or referencing the physical evidence (e.g., groundwater sampling/measurement/migration barrier data) and rationale why contaminated groundwater is expected to remain within the (horizontal or vertical) dimensions of the “existing area of groundwater contamination”²).
- _____ If no (contaminated groundwater is observed or expected to migrate beyond the designated locations defining the “existing area of groundwater contamination”²) – skip to #8 and enter “NO” status code, after providing an explanation.
- X** If unknown – skip to #8 and enter “IN” status code.

Rationale and Reference(s):

As indicated in #Item 2, previous investigations are very limited. There are not enough groundwater monitoring data to fully assess site-wide GW quality although groundwater has been impacted by previous releases.

On May 2008, the facility prepared and submitted Phase I RCRA Facility Investigation (RFI) Workplan. When the Phase I RFI is completed, contaminants and their concentrations will be further evaluated to define the area of existing groundwater contamination.

References:

Phase I RCRA Facility Investigation (RFI) Workplan (May 2008) for Griffin Pipe Products Company

Footnotes:

² “existing area of contaminated groundwater” is an area (with horizontal and vertical dimensions) that has been verifiably demonstrated to contain all relevant groundwater contamination for this determination, and is defined by designated (monitoring) locations proximate to the outer perimeter of “contamination” that can and will be sampled/tested in the future to physically verify that all “contaminated” groundwater remains within this area, and that the further migration of “contaminated” groundwater is not occurring. Reasonable allowances in the proximity of the monitoring locations are permissible to incorporate formal remedy decisions (i.e., including public participation) allowing a limited area for natural attenuation.

Migration of Contaminated Groundwater Under Control
Environmental Indicator (EI) RCRIS code (CA750)
Page 5

4. Does “contaminated” groundwater **discharge** into **surface water** bodies?

_____ If yes – continue after identifying potentially affected surface water bodies

_____ If no – skip to #7 (and enter a “YE” status code in #8, if #7 = yes) after providing an explanation and/or referencing documentation supporting that groundwater “contamination” does not enter surface water bodies

_____ If unknown – skip to #8 and enter “IN” status code.

Rationale and Reference(s):

**Migration of Contaminated Groundwater Under Control
Environmental Indicator (EI) RCRIS code (CA750)**

Page 6

5. Is the **discharge** of “contaminated” groundwater into surface water likely to be “**insignificant**” (i.e., the maximum concentration³ of each contaminant discharging into surface water is less than 10 times their appropriate groundwater “level,” and there are no other conditions (e.g., the nature, and number, of discharging contaminants, or environmental setting), which significantly increase the potential for unacceptable impacts to surface water, sediments, or eco-systems at these concentrations)?

_____ If yes – skip to #7 (and enter “YE” status code in #8 if #7 = yes), after documenting: 1) the maximum known or reasonably suspected concentration³ of key contaminants discharged above their groundwater “level,” the value of the appropriate “level(s),” and if there is evidence that the concentrations are increasing; and 2) provide a statement of professional judgement/explanation (or reference documentation) supporting that the discharge of groundwater contaminants into the surface water is not anticipated to have unacceptable impacts to the receiving surface water, sediments, or eco-system.

_____ If no – (the discharge of “contaminated” groundwater into surface water is potentially significant) - continue after documenting: 1) the maximum known or reasonably suspected concentration³ of each contaminant discharged above its groundwater “level,” the value of the appropriate “level(s),” and if there is evidence that the concentrations are increasing; and 2) for any contaminants discharging into surface water in concentrations³ greater than 100 times their appropriate groundwater “levels,” the estimated total amount (mass in kg/yr) of each of these contaminants that are being discharged (loaded) into the surface water body (at the time of the determination), and identify if there is evidence that the amount of discharging contaminants is increasing.

_____ If unknown – skip to #8 and enter “IN” status code.

Rationale and Reference(s):

Footnotes:
³-

As measured in groundwater prior to entry to the groundwater-surface water/sediment interaction (e.g., hyporheic) zone.

Migration of Contaminated Groundwater Under Control
Environmental Indicator (EI) RCRIS code (CA750)
Page 7

6. Can the **discharge** of “contaminated” groundwater into surface water be shown to be “**currently acceptable**” (i.e., not cause impacts to surface water, sediments or eco-systems that should not be allowed to continue until a final remedy decision can be made and implemented⁴)?

_____ If yes – continue after either:

- (1) identifying the Final Remedy decision incorporating these conditions, or other site-specific criteria (developed for the protection of the site’s surface water, sediments, and ecosystems), and referencing supporting documentation demonstrating that these criteria are not exceeded by the discharging groundwater; OR
- (2) providing or referencing an interim-assessment⁵, appropriate to the potential for impact, that shows the discharge of groundwater contaminants into the surface water is (in the opinion of a trained specialists, including ecologist) adequately protective of receiving surface water, sediments, and eco-systems, until such time when a full assessment and final remedy decision can be made. Factors which should be considered in the interim-assessment (where appropriate to help identify the impact associated with discharging groundwater) include: surface water body size, flow, use/classification/habitats and contaminant loading limits, other sources of surface water/sediment contamination, surface water and sediment sample results and comparisons to available and appropriate surface water and sediment “levels,” as well as any other factors, such as effects on ecological receptors (e.g., via bio-assays/benthic surveys or site-specific ecological Risk Assessments), that the overseeing regulatory agency would deem appropriate for making the EI determination..

_____ If no – (the discharge of “contaminated” groundwater into surface water is potentially significant) continue after documenting: 1) the maximum known or reasonably suspected concentration³ of each contaminant discharged above its groundwater “level,” the value of the appropriate “level(s),” and if there is evidence that the concentrations are increasing; and 2) for any contaminants discharging into surface water in concentrations³ greater than 100 times their appropriate groundwater “levels,” the estimated total amount (mass in kg/yr) of each of these contaminants that are being discharged (loaded) into the surface water body (at the time of the determination), and identify if there is evidence that the amount of discharging contaminants is increasing.

_____ If unknown – skip to #8 and enter “IN” status code.

Rationale and Reference(s):

Footnotes:

⁴ Note, because areas of inflowing groundwater can be critical habitats (e.g., nurseries or thermal refugia) for many species, appropriate specialist (e.g., ecologist) should be included in management decisions that could eliminate these areas by significantly altering or reversing groundwater flow pathways near surface water bodies.

⁵ The understanding of the impacts of contaminated groundwater discharges into surface water bodies is a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration to be reasonably certain that discharges are not causing currently unacceptable impacts to the surface waters, sediments or eco-systems.

Migration of Contaminated Groundwater Under Control
Environmental Indicator (EI) RCRIS code (CA750)
Page 8

7. Will groundwater **monitoring** / measurement data (and surface water/sediment/ecological data, as necessary) be collected in the future to verify that contaminated groundwater has remained within the horizontal (or vertical, as necessary) dimensions of the “existing area of contaminated groundwater?”

- _____ If yes – continue after providing or citing documentation for planned activities or future sampling/measurement events. Specifically identify the well/measurement locations which will be tested in the future to verify the expectation (identified in #3) that groundwater contamination will not be migrating horizontally (or vertically, as necessary) beyond the “existing area of groundwater contamination.”
- _____ If no – enter “NO” status code in #8. skip to #7 (and enter a “YE” status code in #8, if #7 = yes) after providing an explanation and/or referencing documentation supporting that groundwater “contamination” does not enter surface water bodies
- _____ If unknown – skip to #8 and enter “IN” status code.

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**Migration of Contaminated Groundwater Under Control
Environmental Indicator (EI) RCRIS code (CA750)**

Page 9

8. Check the appropriate RCRIS status codes for the Migration of Contaminated Groundwater Under Control EI (event code CA750), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (attach appropriate supporting documentation as well as a map of the facility).

_____ YE – Yes, “Migration of Contaminated Groundwater Under Control” has been verified. Based on a review of the information contained in this EI determination, it has been determined that the “Migration of Contaminated Groundwater” is “Under Control” at the Griffin Pipe Products Company, EPA ID # VAD065417008, located in 10 Adams Street, Lynchburg, Virginia 24504. Specifically, this determination indicates that the migration of “contaminated” groundwater is under control, and that monitoring will be conducted to confirm that contaminated groundwater remains within the “existing area of contaminated groundwater” This determination will be re-evaluated when the Agency becomes aware of significant changes at the facility.

_____ NO – Unacceptable migration of contaminated groundwater is observed or expected.

 X IN – More information is needed to make a determination.

Completed by		<i>Fuxing Zhou</i>	Date	9/4/08
	(Print)	Fuxing Zhou		
	(Title)	Environmental Specialist II		

Supervisor		<i>Leslie A. Romanchik</i>	Date	9/11/08
	(Print)	Leslie A. Romanchik		
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Locations where References may be found:

Department of Environmental Quality
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Attachment:

SWMU/AOC and Wells Location Map

